

**State Water Project
Summary of Environmental Expenditures*
Historical through 1992**

	Amount (\$1,000)
Environmental Related Costs	
Suisun Marsh	\$ 64,600
Water Quality	37,843
Bay-Delta Protection Studies	37,261
Skinner Fish Facilities	20,400
Fish Loss Payments	11,800
Fish and Wildlife Studies	5,514
Sherman Island Settlement	3,600
Twitchell Island Purchase	3,400
	\$ 184,418
 Facilities Planning and Pre-Operation Costs	
Future Water Supply	\$ 40,763
Planning	30,800
Los Banos Grandes	13,887
Peripheral Canal	12,600
Other Facilities	1,536
Levees	1,100
Oroville Runoff Enhancement	1,060
Recreation	289
	\$ 102,035
 Facilities Right of Way, Design and Construction	
Peripheral Canal	\$ 12,400
Other Facilities and Rights of Way	4,500
Water - Right of Way, Quality Testing	3,967
Property Re-utilization and disposal	1,900
North-South Delta Facilities	1,500
Activation	119
	\$ 24,386
 Allocated General SWP Costs	
Water Purchases	\$ 21,509
State Water Project Analysis Office	4,748
Specific Conservation Cost	3,000
Oroville Runoff Enhancement	1,061
Other	400
Project Operation Control Center Relocation	304
General Operating Costs	237
	\$ 31,259
 Other Costs	
Other	\$ 5,428
Future Water Supply	5,245
	\$ 10,673
 Grand Total	 \$ 352,771

* From Ernst Young, "Phase I Report on State Water Project Environmental and Mitigation Expenditures in the Delta Area", May 1994.

State Water Project Environmental Programs*

John E. Skinner Fish Protection Facility

About \$20.4 million has been spent on this facility. DWR estimates that about \$2.1 million annually will be spent to operate the Skinner Fish Facility. Skinner was built in 1968 between Clifton Court Forebay and the pumping plant near Byron in order to increase the natural survival rate of fish by reducing losses at the Banks Delta Pumping Plant. Since the mid-1980s at least \$10 million has been spent to improve the design and operation of the Skinner Fish Protection Facility. Through 2035 about \$88 million will be spent to operate the Skinner facility.

Fish Loss Payments

DWR's agreement with the state Department of Fish and Game required a \$15 million lump sum payment and annual payments for fish losses caused by the SWP. Total expenditures through 1992 are about \$11.8 million (including \$6 million of the lump sum payment). Future expenditures are expected to be \$2.2 million annually, plus the \$9 million remaining in the lump sum account. Total expenditures through 2035 will be about \$101 million.

Projects funded through the lump sum fund include:

- Anti-poaching programs.
- Gravel bed restoration on the upper Sacramento River.
- Installing fish screens in Suisun Marsh.
- Eradicating weeds on the Merced River that impede the migration of Chinook Salmon.

Suisun Marsh

Suisun Marsh contains 12% of California's brackish marsh habitat, and is the largest contiguous wetland in the state. Water quality standards for Suisun Marsh have been established by the State Water Resources Control Board to ensure that an optimum habitat for plants and waterfowl is maintained, and to preserve the Suisun Marsh as a brackish water tidal marsh. DWR built state-of-the-art salinity control facilities for Suisun Marsh in 1978. The salinity control gates alone cost \$18 million. Through 1992 the SWP has spent almost \$65 million in Suisun Marsh.

Twitchell and Sherman Islands

DWR and the state Department of Fish and Game have jointly developed a wildlife management plan for Sherman and Twitchell Islands. The management plan is designed to benefit species that inhabit wetland, upland and riparian habitats, and to provide recreational opportunities for hunting and wildlife viewing. DWR expects that total Twitchell Island purchases will cost about \$5 million. DWR also plans on purchasing much of Sherman Island as well, at a cost of \$24.8 million (of which \$11 million has been spent to date).

Winter-Run Salmon

To compensate for unintentional losses of Winter-Run Salmon due to the SWP's operations, DWR has modified its operations to include:

- Restoring gravel beds in the upper Sacramento River.
- Modifying releases from Lake Oroville to ensure optimal water temperature and minimum flows.
- Altering schedules for pumping to improve flows.
- Leaving the Montezuma Slough salinity control gates in the "down" position from March 1 through March 23, 1992.
- Reducing water export rates in April 1992 to ensure restrictions imposed by the National Marine Fisheries Service (NMFS) were not exceeded.

Feather River Fish Hatchery

DWR constructed the Feather River Fish Hatchery in the 1960s to offset the loss of upstream salmon spawning habitat by construction of Oroville Dam. The hatchery has the capacity to rear several million juvenile salmon and steelhead trout for release in the Feather River, the estuary, and other streams in the northern Sacramento Valley. The total cost of hatchery features are about \$5.7 million.

Other Environmental Activities

Delta Smelt

The Department of Water Resources is funding a three-year study to assess the population of the Delta Smelt. The study, developed through the Interagency Ecological Study Program, will provide information about:

- Requirements for spawning and nursery habitats.
- Feeding patterns.
- Toxicity effects.
- Losses due to agricultural diversions in the Delta.
- Mathematical modeling of population dynamics.

Winter-Run Salmon

DWR and USBR are jointly funding a monitoring program to help detect when Winter-Run Salmon enter the Delta. USFWS is conducting the study.

Predator Management Program

Predatory fish (mostly subadult striped bass) account for most fish losses in Clifton Court Forebay. Fish most lost to predators include salmon smolts, steelhead trout and small striped bass. DWR and CDFG estimate losses caused by subadult striped bass to be 75 percent for salmon smolts and steelhead trout, and from 0 to 100 percent for young striped bass (depending upon size). Dwr has worked with the Interagency Ecological Studies Program to reduce the

losses to predators. In March 1992 large nets and hooks and lines were used to remove about 2,000 subadult striped bass from Clifton Court. The fish were trucked to the Sacramento River and released. DWR is implementing a more comprehensive predator management program, aimed at reducing predation rates to 15 percent.

Production of Hatchery Fish

As part of its agreement with CDFG to mitigate for the direct losses of fish, DWR has contracted with several growers to raise fish for planting in the Delta. As of June 1992 over 4.6 million fish have been planted in the Delta and San Francisco Bay.

Bay-Delta Anti-Poaching Program

In 1992 DWR began funding six new warden positions in CDFG. Two new state-of-the-art patrol boats were purchased for CDFG to use in their efforts to reduce poaching of all species, especially subadult striped bass. Presently, DWR is funding a total of 10 game wardens and four patrol boats. The program will cost \$4 million over a five year period. CDFG estimates that about 250,000 striped bass yearlings and 250,000 salmon smolts annually are saved because of the expanded enforcement program.

Fisheries Management Plan for Lake Oroville

Under an order by the Federal Energy Regulatory Commission, DWR is developing a fisheries management plan for Lake Oroville. The five-year study will cost about \$1.3 million.

Compliance Monitoring

DWR spends about \$3 million annually to monitor water quality, fish, and fish food organisms in the estuary. These efforts will help determine the SWP's impacts on the Bay-Delta's environmental resources. This monitoring is a condition of DWR's water right permits.

* From Ernst & Young, "Phase I Report on State Water Project Environmental and Mitigation Expenditures in the Delta Area", May 31, 1994; Bulletin 132-92, Department of Water Resources; "Economic Costs to the State Water Project of Environmental Protection and Mitigation Measures", Randall Brown and Raymond Hoagland, 1993 (unpublished report).